# Socio-economic Baseline Study of Peleliu State



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<sup>1</sup>Shirley Koshiba, <sup>2</sup>Karen E. McNamara, <sup>1</sup>Marine Gouezo, <sup>1</sup>Evelyn Otto, <sup>1</sup>Randa Jonathan, <sup>1</sup>Vallin Kloulechad



<sup>1</sup>Palau International Coral Reef Center 1 M-Dock Road P.O. Box 7086 Koror, Palau 96940 <sup>2</sup> The University Of Queensland, St Lucia QLD 4072, Australia

# **Executive Summary**

In 2015, the Palau International Coral Reef Center in collaboration with the University of Queensland, conducted a baseline socio-economic study within six PAN States of Palau. The results presented in this report are based on one of six PAN states: Peleliu State. The study utilized household questionnaires and key informant interviews incorporating key socio-economic indicators at the regional level (Micronesia Challenge), National level (Palau Indicators) and site level (local management plan).

Results from this study indicate that most respondents were aware and knowledgeable of the PAN, and Peleliu State conservation area, however only 35% of respondents had heard of or were knowledgeable of the MC. Most respondents indicated extensive and high level of support for the PAN and state conservation area, however 47% of respondents could not indicate their level of support for the MC due to having limited or no knowledge of the initiative. This signifies the need to increase awareness and educational campaigns regarding the MC in Peleliu. 71% of surveyed households participate in fishing related activities, but mainly for food consumption and less for income generating activities. Similarly, more than half of surveyed households reported that at least one member of their household participates in farming activities mainly for food consumption.

Although most respondents attributed no changes to locally sourced marine food availability to the marine protected area, most respondents were supportive of the MPA and indicated that the boundaries of the MPA were clearly visible and properly marked.

Most key informants spoke of the need to increase the level of awareness of the purpose of Teluleu MPA as well as the rules and regulations of the MPA. In addition, most key informants indicated the need to regularly communicate monitoring results to the community for the community to have a better understanding of the status, trends, and changes of the marine resources within Teluleu MPA. Finally, most survey respondents as well as key informants indicated the need to strengthen the level of enforcement for Teluleu MPA including having additional conservation officers, funding, equipment (boats, proper citation equipment/materials), and training (surveillance and biological). These results serve as baseline socioeconomic data for Peleliu's Conservation area, however continuous monitoring is needed in order to track socio-economic trends and changes of the protected area in Peleliu.

#### **Introduction and Context**

Socio-economic information provides resource managers and relevant stakeholders important information to effectively manage protected areas. Within the Micronesia region, the MC serves as an initiative to effectively conserve 30% of near shore and 20% of terrestrial resources across Micronesia by 2020. In Palau a system of protected areas known as the Palau PAN was created with the goal of conserving and sustaining Palau's pristine resources and is Palau's mechanism to achieving the goals of the MC. This study aims to assess the effectiveness of PAN sites in improving the livelihood outcomes of Palau's communities. It does so by conducting a socio-economic study within six PAN States of Palau. The results presented in this report are based on just one of those six states: Peleliu State.

Veitayaki (1997: 124) notes that 'nearly all of the marine management systems now being tried in contemporary societies were used in some form in traditional Pacific Island management systems'. These have included actions such as closed seasons and/or areas, size and catch limitations, equipment control and prohibitions. The PAN, being implemented across Palau, in many ways pays close tribute to the traditional marine management system – Bul – that was in place for many, many decades.

In a broad brush manner, the literature on implementing protected areas, particularly marine areas, points to their lack of success, especially in developing countries (e.g. Cinner, 2007; Johannes, 2002). While these studies promote a rather grim prognosis for protected areas, ambitious calls to establish more conservations areas globally continue (Mora et al., 2006). Making this study novel is that it builds on a limited knowledge base of empirical data on local people's behaviours, support for, and perceptions of the protected areas, not only in Palau, but globally (see Bartlett et al., 2009).

# **Methods and Study Site**

#### **Methods**

This study utilized a structured household questionnaire administered across six States of Palau: Kayangel, Ngaraard, Ngchesar, Ngiwal, Airai and Peleliu. Within each state is a registered marine and/or terrestrial PAN site. While the aim of this study was to determine a variety of social factors related to marine protected areas, equivalent terrestrial questions were conducted where applicable. This study focused

on surveying individuals over 18 years old who could speak on behalf of their household and were considered to be the head of household, being mindful too of the need to try and ensure a gender balance across the sample size. To do so, the local data collectors asked if either the male or female head of household was available to be surveyed.

This data collection method was deemed most appropriate and efficient in collecting a large sample size across a broad geographical area. The main objectives of the household questionnaire were to ascertain:

- Socio-demographic data on the respondent and their household;
- Livelihood activities and household income levels;
- Food and water security at the household level; and
- Individual views on the Conservation Areas in their State.

Each question attempted to align with some of the indicators set by the Micronesia Challenge, Palau Indicators and PICRC's own indicators. The questionnaire is provided in Appendix 1 and each question also shows which indicator it is attempting to align with. The questionnaire also more broadly aligns with the Marine Protected Areas Management Effectiveness Initiative set up by the World Conservation Union's World Commission on Protected Areas (Marine) and the World Wide Fund for Nature, which has developed 16 indicators related to the socio-economic dimensions of marine protected areas.

Accompanying the household questionnaires were a series of key informant interviews. These were conducted by PICRC staff with a total of 7 people from Peleliu State. These interviews were held with Peleliu State Government officials,

village chiefs, Peleliu PAN staff, local fishermen/women, and leaders and/or members of Peleliu traditional community groups. An interview schedule with a list of semi-structured questions was used to guide the interview to help clarify some of the questionnaire findings and also ascertain the views of these interviewees in relation to the success and challenges of the conservation areas. Their views have been integrated into the discussion section.

A sample size for the socio-economic household questionnaire was determined for each of the six sites based on their population size (at a household level), as well as the desired confidence interval (or, margin of error— set at 5%) and confidence level (95%). A sample size calculator (<a href="http://www.surveysystem.com/sscalc.htm">http://www.surveysystem.com/sscalc.htm</a>) was used to calculate the sample size for each of the sites — the results of which are illustrated below in Table 1.

**Table 1.** Determining the sample size for the six study sites

State and Study Site	Number of households	Number of household questionnaires (based on the sample size calculator)	Total number of questionnaires actually collected		
Ngaraard	111	86	88		
Ngchesar	78	65	65		
Ngiwal	78	65	64		
Peleliu	146	106	106		
Airai	650	242	242		
Kayangel	27	27	25		
Total	1,162	591 (51% of all households)	590		

In total, the sample size was determined as 591 household questionnaires. For Peleliu State, the focus of this report, 106 questionnaires were required and 106 were collected for the study in total.

The questionnaires were administered in each of the six sites by local data collectors who were trained on how to collect data ethically and systematically. The data were then inputted into the Statistical Package of the Social Sciences (v22.0), and analysed. The analysis, for the purposes of this report to show baseline data, included basic frequencies, percentages, means and sums.

Provided below is a summary of the various indicators that were used and integrated into the household questionnaire.

#### Micronesia Challenge Indicators:

- MC1: Perception of change in food availability
- MC2: Household participation in MC management planning or decision making
- MC4: Change in violations and illegal activities related to fishing, harvesting and use of natural resources
- MC8: Community awareness of MC
- MC9: Community support for MC

#### Palau Indicators:

- PI1: Household food availability and sources
- PI2: Household dependence on local food resources
- PI3: Level of harvesting from local resources and their conditions-fishers and farmers
- PI4: Household income, expenses and subsistence distribution by source
- PI5: Perception of quality and quantity of water

#### <u>Teluleu Conservation Area Five Year Management Plan 2013-2018:</u>

- **Goal 3:** Achieve wide community understanding and support of Teluleu by the people of Peleliu and visitors alike.
- **Goal 2-1:** By December 2012, official boundary for Teluleu is properly marked and clearly visible from afar.
- **Goal 1-2:**By September 2013, a Teluleu Research and Monitoring Plan is produced that includes specific monitoring needs for the Peleliu community including research for potential aquaculture development in Teluleu
- **Goal 1-4:** By December 2015, an assessment to expand protected area beyond Teluleu to address source of threats and allow for a "ridge to reef" ecosystem based management approach is developed.

### **Study Site**

The state of Peleliu is located southwest of Koror and includes five separate island bodies surrounded by its twelve nautical miles near shore water. Peleliu has five main hamlets: Ngerkeukl, Ngerchol, Ngesias, Ngerdelolk, and Teliu. The main area of Klouklubed has a total area of 5 mi² (13 km²) that holds tenure of Teluleu Conservation Area (Teluleu Conservation Area management Plan 2013-2018). Peleliu has a total of and 146 households. This study focuses on the community's perception on Teluleu conservation area which is a marine protected area (MPA).

Teluleu is a near-shore MPA that was established in 2001 through Peleliu State Public Law-188-01. The MPA was designated as a key marine habitat for juvenile fish. It is a no-take zone a registered PAN site. The MPA measures 540,016 m<sup>2</sup> and is commonly recognized by the people where many key species of juvenile fish aggregate. The conservation area also includes various types of sea cucumbers, sea urchins, clams, and other species that are important to the Peleliu community for

subsistence and economic purposes (Teluleu Conservation area management plan 2013-2018).



**Figure 1.** Shows the Teluleu Marine Protected Area (red shaded area) located in Peleliu State.

# **Results**

# Socio-demographics

Slightly over half of survey respondents were female (52.8%), while 47.2% of respondents were male. The mean age of respondents was 52 years old, with a range of 22 to 84 years old. Most respondents have lived in Peleliu all their lives, with less than 3% having lived in Peleliu for more than 5 years. The vast majority of respondents were married (63.2%), followed by being single (23.6%), widowed (11.3%) and divorced (1.9%). Almost all respondents hold Palauan citizenship (99%)

and indicated having extensive traditional knowledge (75.2%). Table 2 provides some further socio-demographic characteristics of the respondents and their households.

Table 2. Socio-demographic information on respondents and their household.

Education (	(%)	Traditiona knowledge		Income (%)		Land tenure (%)		Participate in resource management (%)	
Up to elementary school	9.5	None	0	Government work	37.7	Traditional agreement	0.9	Never	11.3
Up to high school	70.5	Some	24.8	Pension/social security	31.1	Owns land	29.2	Seldom	28.3
Up to college	18.1	Extensive	75.2	Fishing (fish, invertebrates)	0.9	Leases from State Government	68.9	Sometimes	51.9
Up to university	1.9			No income	0	Private rental	0	Often	2.8
				Other	0.0	Informal agreement	0.9	Always	5.7
				Private business	29.2				
				Farmer	0				

70.5% of respondents reported having obtained formal education up to high school and 18.1% reported obtaining formal education up to college (Table 2). 28.3% of respondents reported that they rarely participated in management planning or the decision making process for Peleliu's protected area, and 51.9% of respondents indicated that they sometimes participate in the decision making process or management planning. 11.3% of respondents have never participated in management planning or the decision making process for Peleliu's protected area (Table 2).

Households ranged in size from 1 to 10, with a mean of 3 people per household. Figure 2 shows the total number of people in each age group living in each surveyed household, and Figure 3 shows the average size of each household.

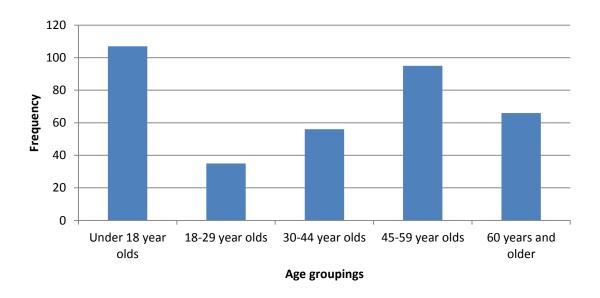


Figure 2. Number of people in each age group living in the surveyed households.

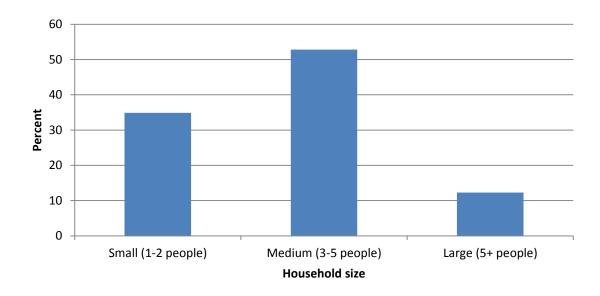


Figure 3. The average size of each surveyed household.

#### **Income and Livelihood activities**

The questionnaire sought to identify the key income and subsistent livelihood activities of each surveyed household. 52% of all surveyed households reported a monthly household income of less than \$500, followed by \$500-\$1000 (32%) and \$1,001-\$1,500 (7.5%) (Figure4). Almost all households (98%) indicated no changes to their household income or expenses as a result of the protected areas (Table 3).

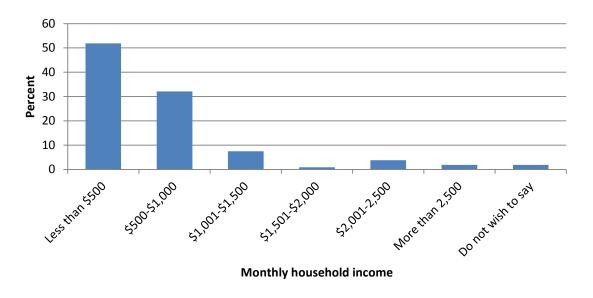


Figure 4. Monthly household income according to respondents.

**Table 3.** The reported effect of the conservation areas on household income and expenses.

	Greatly	Somewhat	Not	Somewhat	Greatly	Don't
	increased	increased	Changed	decreased	decreased	know
Household income	0%	1.9%	98.1%	0%	0%	0%
Household expenses	0%	1.9%	98.1%	0%	0%	0%

Respondents also reported on their household's key subsistence livelihood activities which included fishing, harvesting invertebrates, farming crops and rearing livestock.

71% of surveyed households reported that at least one member of their household participates in fishing fish and harvesting invertebrates. 56% of households mostly

participated in fishing activities for food consumption and only 16% of households engage in fishing related activities for income and food consumption (Figure 5). 22% of households reported harvesting invertebrates mainly for food consumption (Figure 5). In addition to, 24% of surveyed households indicated that they harvested invertebrates for income and food consumption (Figure 5). The majority of all surveyed households in Peleliu participated in fishing fish and harvesting invertebrates on a weekly and/or monthly basis.

In terms of farming crops, 79% of households reported that at least one member of their household participates in farming activities (Figure 5). The majority of all households reported very minimal use of pesticides. Household respondents mostly participated in farming activities for food consumption and less for income generating activities (Figure 5). 86% of respondents did not participate in livestock activities, while less than 10% of households reared livestock for either income or food consumption (Figure 5).

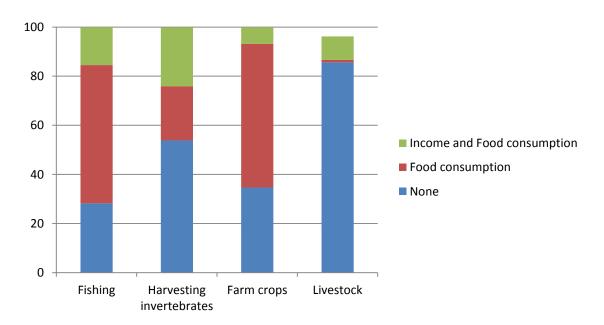


Figure 5. Household level of resource use for livelihood activities in Peleliu State.

Of the surveyed households that participated in fishing related activities, on average 36% of their fish catch was for consumption, followed by giving away (19%), family customs (15%) and selling (4%) (Figure 6). In terms of harvesting invertebrates, households reported that on average 26% of their invertebrate harvest was for consumption, followed by giving away (10%), Family customs (5%) and selling (4%) (Figure 6). Similarly, households reported that most of their household grown crops were mainly for food consumption (33%), giving away (16%) and family customs (14%) with less for selling or income (2.5%), (Figure 6).

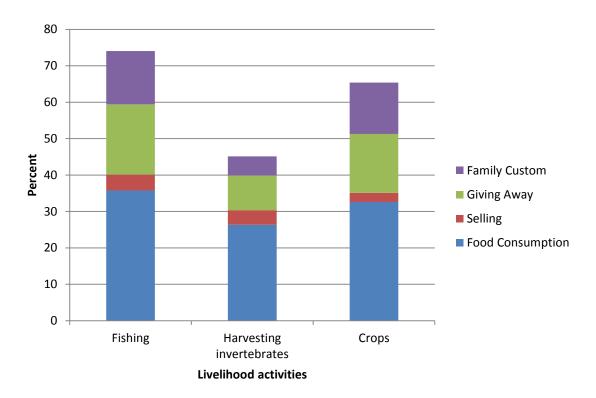


Figure 6. Household resource use for various livelihood activities in Peleliu state.

Of the households that participated in fishing and invertebrate harvesting activities, 43% participated in spear (diving) and fish by handline (41%), followed by gill net (26%), cast net (19%) and spear (walking) (19%) (Figure 7). Figure 7 further summarized all key methods used as a means for fishing fish or harvesting invertebrates.

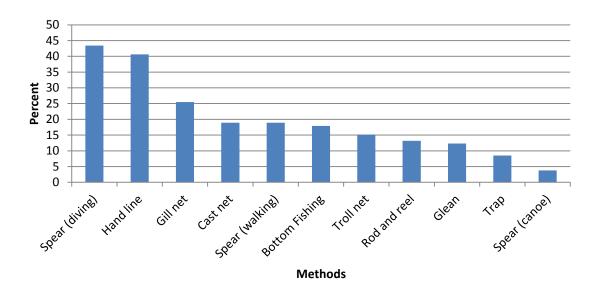


Figure 7. Methods used by households for fishing related activities.

Majority of households reported that the top two threats to Peleliu's fisheries are overfishing/illegal fishing and climate change.

### **Food and Water Security**

Respondents were asked where their household's food supply comes from, how often it was sourced and if this was different compared to five years ago. The results of this are in Table 4.

33% of surveyed households reported that their household relies moderately on local market crops and/or vegetables and this was the same compared to five years ago (Table 4). 28.6% of households relied very little on household grown crops, while 41% of all households relied moderately on imported crops and/or vegetables (Table 4). 26.7% of households relied a lot on self-caught marine resources, with 40% of households having little reliance on local market marine resources. 34.3% of the surveyed households also reported having little reliance on imported marine

resources (Table 4). Almost all household food sources were not different compared to five years ago.

**Table 4.** Household's food supply in comparison to five years ago (**bold** denotes highest percent in each food category).

	Now - how often (%)				Compared to five years ago (%)			
	A lot	Moderate	Little	None	More	Same	Less	
Household grown crops <u>and/or</u> vegetables	4.8	18.1	28.6	48.6	5.9	83	6.9	
Local market crops and/or vegetables	5.8	33	33	28.2	3.9	90.2	5.9	
Imported crops <u>and/or</u> vegetables	18.9	41	27.6	12.3	2.9	89.4	7.7	
Self-caught marine resources	26.7	23.8	22.9	26.7	6.7	92.3	1.0	
Local market marine resources	5.7	21	40.0	33.3	1.0	94.2	4.8	
Imported marine resources	6.7	24.8	34.3	34.3	1.9	95.2	2.9	
Local freshwater resources	0	0	0	0	0	0	0	
Local land animals (pigs, birds, fruit bats)	1.9	15.2	51.4	31.4	2.9	93.3	3.8	
Locally produced livestock	2.8	5.7	47.2	44.3	3.8	94.3	1.9	
Imported livestock (meat)	10.4	31.1	46.2	12.3	1.0	93.3	5.8	
Imported processed or canned foods from shop	30.2	38.7	23.8	6.7	2.9	96	1.0	
Other	0	0	0	0	0	0	0	

79% of surveyed households indicated that they or members of their households grew farm crops. Of the households that indicated growing farm crops, 63% grow taro, followed by fruit trees (52%), garden vegetables (42%), sweet potatoes (33%), betel nut (29%), tapioca (24%) and coconut (9%) (Figure 8). Respondents who participated in farming activities mainly used green manure and inorganic or compost for fertilizing their farm crops (Figure 9). In terms of pesticide use (including insecticides, herbicides and fungicides), respondents showed a very limited use (3.8%) on household grown crops.

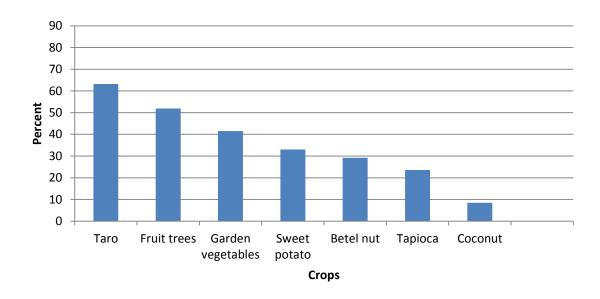


Figure 8. Crops grown by households in Peleliu state.

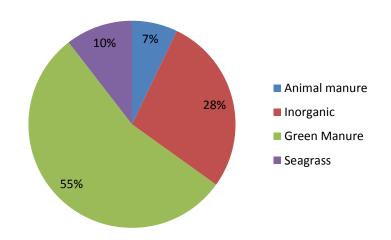


Figure 9. Main fertilizers used on household grown crops.

Respondents were also queried regarding their perceptions on the quality of their household drinking water and general use water. Almost all households (97%) rely on household rainwater tanks for sources of drinking water. 97% of respondents reported that they had access to safe drinking water (Figure 10). 94.3% of respondents reported having safe general use water for their household sometimes with 4.7% indicating having access to safe general use water (Figure 10).

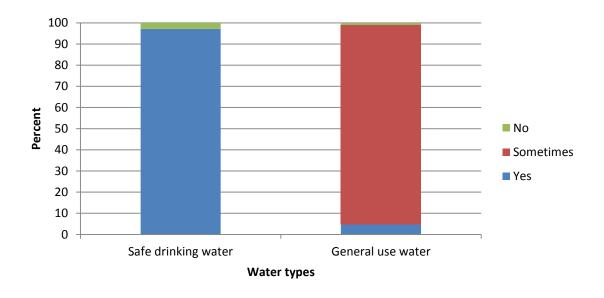


Figure 10. Household access to safe drinking water and general use water.

#### **Views on the Conservation Areas**

With the overall focus of this study, it was crucial to identify if respondents had heard of different conservation initiatives such as the MC, PAN, state bul and state conservation areas. 96.2% of all surveyed respondents were knowledgeable of why the conservation area in Peleliu was established. Over 90% of respondents were aware of the PAN, state bul and state conservation areas, while only 35% of respondents had heard of the MC (Figure 11). Most respondents indicated medium to extensive level of knowledge regarding the PAN, state bul and state conservation areas (Figure 12). More than half of respondents indicated having no knowledge of the MC (Figure 12). In terms of respondents' level of support, more than half of respondents indicated extensive level of support for the PAN, state bul and state conservation areas, however 47% of respondents could not indicate their level of support for the MC as they indicated having limited or no knowledge regarding the initiative (Figure 13).

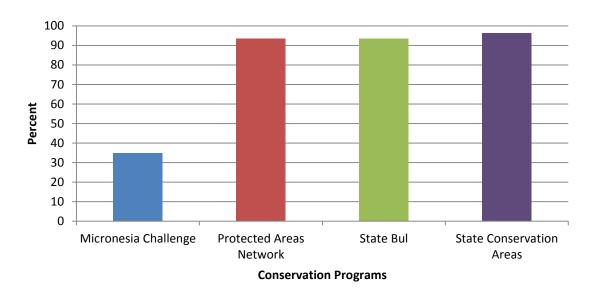


Figure 11. Level of awareness of different conservation initiatives.

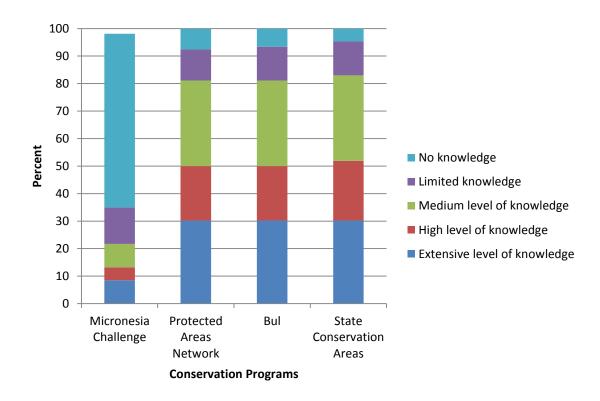


Figure 102. Level of knowledge of different conservation initiatives.

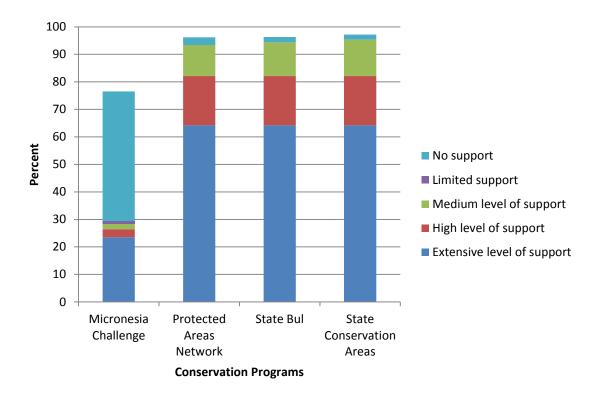
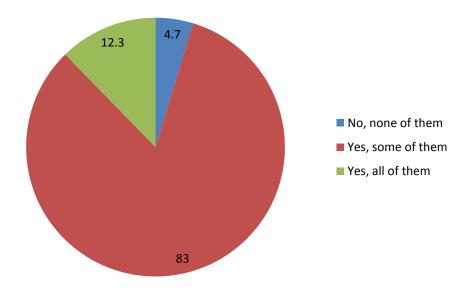


Figure 13. Level of support for different conservation initiatives.

83% of respondents reported that they have knowledge of any of the allowable activities or non-allowable activities within the Peleliu State Conservation area (Figure 14). In terms of respondents involvement with activities related to the conservation areas in Peleliu State, 80% of respondents indicated that they or members of their households have participated in some activities related to the conservation areas (Figure 15).



**Figure 14.** Respondents' knowledge of allowable or non-allowable activities of the conservation areas in Peleliu.

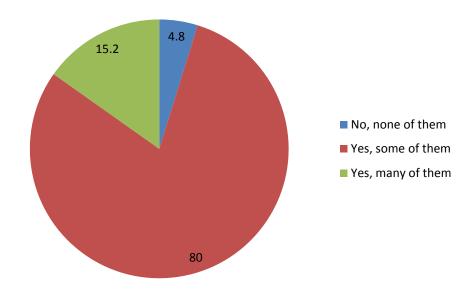


Figure 15. Involvement with activities related to the conservation areas in Peleliu state.

The main sources of outreach materials witnessed by respondents were factsheets and awareness print materials. 78% of respondents reported having read and/or seen fact sheets related to the conservation areas as well as awareness print materials (43%) (Figure 16). Less than 30% of respondents indicated having been

involved or witnessed student field education programs and education and/or awareness plans related to the conservation areas in Peleliu (Figure 16).

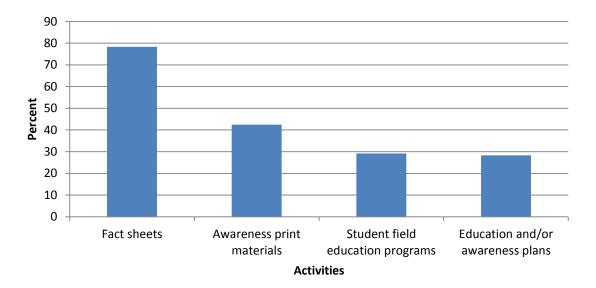


Figure 16. Activities that respondents and their household members have participated in.

Almost all respondents did not attribute any changes to locally-sourced marine food availability to the protected areas (Table 5). This was similar to changes to the overall quality of the marine environment (Table 5).

**Table 5.**The perceived impact of the Marine Protected Areas on livelihood factors (**bold** denotes highest percent for each variable listed in the first column).

	Greatly increased	Somewhat increased	Not changed	Somewhat decreased	Greatly decreased	Don't know
Overall quality of the marine environment	2.8	2.8	93.4	0	0	.9
Abundance of fish	1.9	2.8	93.4	0	0	.9
Abundance of invertebrates	1.9	0	95.3	.9	.9	.9
Size of fish	1.9	1.9	93.4	.9	.9	.9
Size of invertebrates	1.9	.9	94.3	.9	.9	.9
Availability of food from fish	1.9	0	95.3	0	1.9	.9
Availability of food from invertebrates	1.9	0	95.3	0	1.9	.9
Spiritual and cultural amenity	1.9	0	95.3	.9	0	1.9

Finally, respondents were asked to reflect on a series of statements related to the overall impact and progress of the Conservation Areas in improving livelihood outcomes. These attitudinal statements were placed on a scale of 0 (do not agree) to 4 (very strongly agree). Respondents could also select 'don't know'. The results (both means and percentages) and illustrated below in Table 7.

**Table 6.** Attitudinal statements related to the Conservation Areas(**bold** denotes highest percent for each variable listed in the first column).

Statements	Mean Value	Very strongly agree	Strongly agree	Moderately agree	Agree a little	Do not agree	Don't know
Overall, the Conservation Area(s) has been beneficial to our community	4.34	61	29.5	2.9	1.9	3.8	1.0
I often see or hear about illegal entry or taking of resources from the Conservation Area(s)	9.68	46.7	35.2	5.7	3.8	1.9	6.7
There is adequate enforcement of the rules of the Conservation Area(s)	3.7	28.6	22.9	7.6	9.5	44.8	1.0
There is adequate monitoring of the natural resources in our community	2.92	49.1	23.6	7.5	10.4	9.4	0
There have been positive livelihood benefits due to the Conservation Area(s)	3.44	60.4	32.1	1.9	2.8	2.8	0
There have been positive economic benefits due to the Conservation Area(s)	4.31	58.1	33.3	1.0	2.9	3.8	1.0
There have been positive cultural and spiritual benefits due to the Conservation	12.33	51.9	27.4	1.9	5.7	3.8	9.4

Area(s)							
There have been positive environmental benefits due to the Conservation Area(s)	4.39	64.2	25.5	3.8	4.7	.9	.9
Everyone benefits equally from the Conservation Area(s)	4.89	50	28.3	5.7	5.7	8.5	1.9
If we want to preserve our natural resources then 'closing off' certain areas is necessary	3.53	67	25.5	1.9	4.7	.9	0

Over half of respondents indicated that they still heard about illegal entry or taking of resources from the conservation area in Peleliu and also indicated that there was not enough enforcement of the conservation area. Although most respondents indicated that poaching still occurred in the conservation area, more than half of respondents believed that overall, the conservation areas had been beneficial to the community.

#### **Local Management Plan**

All respondents were knowledgeable of Teluleu conservation area and 99% of respondents were aware of the boundaries of the protected area. Almost all respondents also stated that the boundaries of Teluleu conservation area are properly marked and clearly visible. 77% of respondents had extensive level of support for aquaculture development in Peleliu followed by 12.4% indicating high level of support for aquaculture as well. 76% of respondents also indicated having extensive level of support for expansion of Teluleu conservation area to include the Ridge to Reef concept which would include having a terrestrial protected area in Peleliu in addition to Teluleu MPA.

### **Discussion**

Most respondents in Peleliu were Palauan citizens of which have lived in Peleliu all their lives. More than half of respondents indicated having obtained an educational level of up to high school, with 75% of respondents indicating an extensive level of traditional knowledge. Slightly more than half of respondents reported having participated in the management planning and decision making process at least once while living in Peleliu.

More than half of survey respondents indicated that at least one member of their household participated in fishing (fish and invertebrates) related activities mainly for food consumption and less for income purposes. More households relied on self-caught marine resources and imported processed canned foods, while having less reliance on household grown crops and local market marine resources. This was similar in comparison to five years ago. In addition, most respondents indicated no changes to locally sourced marine food availability to the marine protected area in Peleliu. This was similar to the overall quality of the marine environment. Similarly, most respondents did not attribute any changes to their household income or expenses as a result of the marine protected area.

A majority of respondents indicated having knowledge as well as having high or extensive level of support for the PAN, state bul and state protected area in Peleliu. Almost all respondents reported that the boundaries of Teluleu MPA are clearly visible and properly marked.

During key informant interviews, most interviewees stated that there needs to be regular communication of monitoring results to the community for better understanding of the status and trends of the resources within Teluleu MPA. This would aid in allowing the community to increase their knowledgeable of the purpose of the MPA as well as the changes that take place overtime regarding the marine resources in Teluleu MPA. All but one key informant stated the need for better and stronger enforcement of the rules and regulations of Teluleu MPA for effective management of Teluleu. Most key informants stated that there was a need for additional conservation officers, funding, equipment (boats, proper citation equipment/materials), and training (surveillance and biological). All key informants strongly supported Teluleu MPA as well as the PAN, however they believed that stronger enforcement of the rules and regulations of Teluleu needs to be in place in order have a more effective MPA.

### Conclusion

The results illustrated in this study provide socio-economic baseline data on the trends and changes that are currently taking place in Peleliu State. More importantly these results can be used by site managers and relevant stakeholders to make a preliminary assessment on the effectiveness of conservation areas as well as PAN sites in improving livelihood outcomes. Socio-economic monitoring overtime is necessary in order to assess changes and trends as they relate to livelihood outcomes and activities.

# **Acknowledgements**

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### HOUSEHOLD QUESTIONNAIRE: PALAU INTERNATIONAL CORAL REEF CENTER

Surveyed by:	Date:	_Survey No:
State:	Hamlet:	

### SECTION ONE: Socio-demographics. Telengtengil a delengchokl

1. Obtain the following information for the <u>'interviewee'</u> - who is the <u>'head of household'</u> (remember to aim for a <u>gender balance</u>, where possible). (PICRC1, MC2)

A. Who Ng techa oungerachel er a delengchokl?	B. Age (in years) Ng tela rekim?	C. Have you always lived in this State? Ke meketeketang el kiei er tia el beluu?	D. Marital Status <b>Ke</b> bechiil?	E. Highest level of formal education Kot el ngar bab el skuul el mtilobed er ngii	F. Highest level of practice of traditional knowledge Klemdengei er a siukang, klebelau me a klechibelau	G. How do you predominately earn an income? Uchul a klekerngem	H. Citizenship <b>Chad er</b> <b>ker</b>	I. Does your family own the land you live on? Tia el om kiei er ngii ng chetemem	J. Participate in resource management planning and decision making Mla nga er a omesodel me a omelchesel a llechul me a omengermelel a ngikel, cheled, blul el basio.
(Interviewee)									
1='Male' head of household 2='Female head of household'		0 =No 1=No, less than 1 year 2 =No, between 1-5 years 3 =No, more than 5 years	1=Single 2=Married 3=Widow 4=Divorced 5=Other (specify)	1=Up to elementary 2=Up to high school 3=Up to college or similar 4=Up to university or similar 5=None 6=Other (specify)	1=Extensive Dmolech el klemedengei  2=Some Medengei a bebil  3=None Diak	1=No income 2=Handicraft 3=Fishing (catch and/or harvest) 4=Farmer (crops, livestock) 5=Private business 6=Remittances 7=Land or house lease 8=Government work 9=Family custom 10=Pension/social security 11=Other (specify)	1=Palau 2=Other (specify)	1=Yes 2=No, lease from State Gov't 3=No, private rental 4=No, informal agreement 5=No, traditional arrangement	0= Never Diak  1= Seldom Derstang  2= Sometimes Bebil ra taem  3= Often Oumesind ra taem  4= Always Bek el taem

2.	Indicate how many people (adults and children), including yourself, live in your household,
	including their age group: Te tela el chad el uldimukl er kau a kiei er a delengcheklem e
	dertela rekrir? (PICRC1, MC2)

	Under 18 years old	18-29 years old	30-44 years old	45-59 years old	60 years old and higher
Number					

#### SECTION TWO: Livelihood Activities and Income. Omenged, Omelngot me a Omengerker

3. What income and subsistent livelihood activities does your household do? Ngera el omenged me a omelngot a omoruul er a delengcheklem? (PI1, PI3, PI4)

E.g.: Do you or anyone else in your household go out to catch or harvest? If No, select 'None'. If Yes, is this for money or food or both (select all that apply). And how often (on average over a year)? Ng ngar ngii a ngar er a delengcheklem el oumenged el melngot el di kall, ng makit a lechub e ngii el teblong? E a le ngar er ngii e ng locha tela el taem er a ta el rak?

Complete this for all the other livelihood activities (harvest, farm crops and livestock).

Cat	Catch (fish, turtles etc)  □None			Harvest (invertebrates)  □None			Farm crops  □None			<b>Livestock</b> □None	
For \$	For food	How often (on av./yr)	For \$	For food	How often (on av./yr)	For \$	For food	Area (acres)	For \$	For food	How many (on av./yr)
		1=daily 2=weekly 3=monthly 4=6 months+			1=daily 2=weekly 3=monthly 4=6 months+			1=<0.25 2=0.25-1 3=>1			1=1-5 2=6-10 3=>10

4. What is the <u>monthly income</u> level of your <u>household</u>? Ng locha telang a uldekial a kerrekerngem me a rebek el mengerker el kiei er a delengcheklem er a chelsel a ta el buil? (PI4)

Less than 500\$ Mekesai er a 500	500- 1,000\$	1,001- 1,500\$	1,501- 2,000\$	2,001- 2,500\$	More than 2,500\$ Betok er a 2,500	Do not wish to say Diak el soal el ouchais

- 5. Have the <u>Conservation Area(s)</u> changed your <u>household income or household expenses</u>? A ika el blul el basio, ng ngar er ngii a blal ngedechii er a klungel a kerrekerngem me a omengitem er a udoud? (PI4)
  - o If No, mark 'not changed' box
  - o If Yes, has it increased or decreased your household income/expenses? Greatly/Somewhat?

	Greatly	Somewhat	Not	Somewhat	Greatly	Don't
	Increased	Increased	Changed	Decreased	Decreased	Know
	Kmal klou	Ngar er	Diak a mla	Mla	Kmal mla	Ng
		ngii	mengodech	ngmanget	ngmanget	ngaukai
Household income.						
Kerrekerngel a						
delengchokl						
Household expenses.						
Omengitel a udoud						
er a delengchokl						

### SECTION THREE: Food and Water Security. Ulekerreuil a Kall me a Ralm

6. Indicate where your <u>household's food supply comes from, how often</u> it is sourced, and if this is <u>different</u> compared to <u>five years ago</u>: Ka mouchais el kmo a kall er a delengcheklem ng ngar ker el mei, e merames ng mekudem a ngeiul/skel, e ngodech a lechub e ng di osisiu me a eim el rak er a mla me mong? (PI2)

	chele	<u>Now</u> - how e <b>chang el ta</b>	<sup>,</sup> often <b>em - kudem</b>			ared to <u>five</u> rak er a ml	years ago a me mong
	A lot	Moderate	Little	None	More	Same	Less
	Mekudem	Klebech	Merames	Diak	Betok	Osisiu	Mekesai
Household grown crops and/or vegetables Sers er a ongraol me a yasai							
Local market crops and/or vegetables Ongraol me a yasai er a makit (delomel er Belau)							
Imported crops <u>and/or</u> vegetables Ongraol me a yasai el ngar er a ikrel Belau el mei							
Self-caught marine resources Oumenged							
Local market marine resources Ngikel me a cheled er a makit							
Imported marine resources Ngikel me a cheled el ngar er a ikrel Belau el mei							
Local freshwater resources <b>Usbechel a ralm</b>							
Local land animals (pigs, birds, fruit bats)  Odoim el charm er a beluu (babii, charm el suebek elik)							

					1				
	ally produced stock	[							
Ker	rbou, kaming me a oii er a sers								
Tec kan	orted livestock (meat) ch er a kerbou, ning el mla er a ikrel elau	[							
can	oorted processed or ned foods from shop nsume er a stouang	[							
Oth		[							
IXu	k bebil								<u> </u>
	ollowing questions are of to catch or harvest (if i	not, m	ove to t	the end of Q	Question10)			<u>eir househ</u>	old go out to
	7. Which methods do er a omenged a on (PI3)	Sele app	ect this blicable nd/or m	box if the factoring the end of Quantum in the factoring the second in the end of Quantum in the end of Quantu	Question10) Collowing questions	uestions a old use to nad er a c	catch or l	narvest? <b>N</b> g	g ngera el telo
	7. Which methods do er a omenged a on	Sele app	ect this blicable nd/or m r er ngi	box if the f	Question 10) Collowing question to the property of the propert	uestions a	catch or h	narvest? <b>N</b> g	g ngera el telo
	7. Which methods do er a omenged a on (PI3)  Glean Omelai el cheled  Spear (canoe) Oltoir (a uel) Melkelikes (omurch a chemang me a	Sele app you an ngan	ect this blicable nd/or m r er ngi	box if the fame and the end of Qualking) ch (di meraline ereel	Question 10) Collowing question to the property of the propert	old use to had er a d  Spear (d  Melech	catch or language living)	narvest? <b>Ng</b> <b>klem?</b> (selo	g ngera el telo
	7. Which methods do er a omenged a on (PI3)  Glean Omelai el cheled  Spear (canoe) Oltoir (a uel) Melkelikes (omurch	Sele app	ect this blicable  nd/or m r er ngi  Spear Omur  Hand	box if the face of your characters of your characte	Collowing question 10)  Your househ rebek el cl	old use to had er a d  Spear (d  Melech	catch or helengche	narvest? <b>Ng</b> <b>klem?</b> (selo	g ngera el telo

8. Over the <u>past year</u>, list up to <u>three locations</u> that <u>you</u> and/or members of your <u>household most</u> <u>frequented</u> for <u>catch or harvest</u>, and indicate if these sites are <u>different</u> to where you <u>most frequented</u> <u>five years ago?</u> Please try and keep these locations quite general and broad. A chelsel tia el mlo merek el rak, e ngera a kldei el basio el kau me ar kiei er a delengcheklem a blechoel el mo er a chei er ngii. E a ika el basio ng ngodech a lechub ng osisiu er a basio el obla er a chei er ngii er a cheim el rak er a mla me mong?(PI3)

	Compared to five years ago				
Location	Same	Different <b>Ngodech</b>			
	Osisiu	Ngodech			

9. Over the past year, list the most popular marine animals your household collectively caught or harvested, how many, and indicate if these animals are different compared to five years ago? Tia el mlo merek el rak, ng ngera el ngikel, cheled me a charm er a kereker (daob) a oblechoel el melai? E locha mle uangera ildisel? E betok ng mekesai er a cheim el rak er a mla me mong?(PI3)

Catch		Compared to five y	Harvest		Compared to five years ago		
Name	Number	Same type	Different type	Name	Number	Same type	Different type
Ngakl	Ildois	Osisiu el bedengel	Kakerous el	Ngakl	Ildois	Osisiu el	Kakerous el
			bedengel			bedengel	bedengel
1	ngikel, cl	any <u>threats</u> to <u>catch or</u> neled me a charm er			chel uchul	e ng mo ngueme	ed a ika el
	$\square$ No						
	$\Box$ Yes $-$	→ Can you <u>list</u> up to <u>t</u>	two top threats	?			
	Ng sebe	echem el masech a tel	blong el uchul	1?			
		Can you <u>list</u> up to <u>tv</u>	wo top solution	<u>ns</u> ?			

Ng sebechem el masech a teblong el sebecheklel?

The following questions are only applicable if the interviewee and/or members of their household grow crops (if not, move to Question 15)

Select this box if the following questions are <u>not applicable</u>

11. Over the past year, which crops did your household collectively grow? (select all that apply) Tia el mlo merek el rak e ngera el dellomel a omullalem? (PI3)

Taro	Coconut	Garden vegetables
Dait/Brak	Lius	Yasai
Tapioca	Sweet potato	Fruit trees
Diokang	Chemutii	Rodech
Diokang	Chemutii Betel nut	Rodech Other

12. Over the <u>past year</u>, what <u>percentage</u> of each <u>input</u> did your <u>household</u> use on its <u>crops</u>? (select all that apply to add up to 100% or if None then put 0%) **Tia el mlo merek el rak e ngera el koeas e uangerang a klungel (tela el basent) a omuluusbech er a omelalem a dellomel? (PI3)** 

Fertilisers	
Animal manure	
Dechil a charm	
Inorganic fertiliser (chemicals)	
Koeas er a Ngebard	
Green manure (weeds) or compost	
Ramk	
Seagrasses	
Char	
Other	
	<u>100%</u>

13. Over the <u>past year</u>, have any <u>pesticides</u> been used on your <u>household crops</u>? Tia el mlo merek el rak, ng ngar er ngii a spray er a charm er a dellomel el bla mousbech er a dellemelem? (PI3)

No	Yes
Diak	Choi

14. Are there any threats to farming crops? Ng ngar er ngii a uchul e ng mo smecher a lechub e ng mad a dellemelem? (PI3, PI11)

$\square$ No	
☐Yes	
Ng sebechem el masech a teblong?	
Can you <u>list</u> up to <u>two top solutions</u> ?	

Ng sebechem el masech a teblong el kerul a lechub e ng sebecheklel?

15. Over the <u>past year</u>, what <u>percentage</u> of the <u>total amount of catch and harvest</u>, and <u>crops grown</u> by your <u>household</u> would be for the <u>following purposes</u> (select all that apply to add up to 100% or if None then put 0%): (PI3) **Tia el mlo merek el rak, ng tela el basent er a cheldmiu me a dellemeliu a mo usbechall er a ika el teletael el beldukl er eou:** 

Catch		Harvest		Crops	
Eating		Eating		Eating	
Blengur		Blengur		Blengur	
Selling		Selling		Selling	
Makit		Makit		Makit	
Giving Away		Giving Away		Giving Away	
Omekang		Omekang		Omekang	
Family Custom		Family Custom		Family Custom	
Mechesang		Mechesang		Mechesang	
	100%		100%		100%

**16.** Indicate where your <u>household water</u> comes from: (select all that apply) (PI5) **A imeliu el ralm ng ngar ker el mei**?

(PI5) A delengch el me er ngii?	eklem ng ngar ng	ii a rolel a un	gil el ralm el	ilumel me	a dousbech er a bl	ai
	Safe drinking water	r Gen	eral use water			
	Ungil ilumel el ral		Ralm el dousbech			
	Yes	☐ Yes				
	Choi	Cho	i			
:	Sometimes	☐ Som	etimes			
	Al Bebil	Al B	Bebil			
	No	□ No				
	Diak	Dial	<u> </u>			
☐ Micronesia Challenge  19. Can you list the a sebeched el meru  ☐ No, none of the Diak  20. Do you know why	Dowing have you head Idukl er eou? Mled Protected A Illowable activities and er a chelsel a behave them      Yes   Chelsel	ard of? (select cha olangch of treas Network in the Conservablul el basio en s, some of the oi, medengei	all that applyer a ike el roker a ike el roker a ike el roker a beluam.  The properties of the content of the c	) (MC8) Kestui el mode  ul	e mla remenges a ngei. State Conservation g sebechem el mas Tthem dengei el rokui	ech a
<b>21.</b> Indicate your <u>leve</u> olangch el olecho	No Diak el of knowledge abotel a delechel a kl					a
	Extensive level	High level	of Mediu	m level of	Limited	No
	of knowledge	knowled	lge kno	owledge	knowledge	knowledge
	Dmolech el	Medenge		lengei a	Oumededenger	Diak
	klemedengei	betok		bebil		kudengei
Micronesia Challenge						
Protected Areas Network						
Bul						
State Conservation Area(s)						

Household rainwater tank

Village rainwater tanks

17. Does your household have access to safe drinking water and/or access to water for general use?

Tank er a blai

Tank er a buai

Village wells or taps

Chido er a beluu

Other\_

Kuk bebil

Stream or river

Omoachel

Madedok

Spring

22. Have <u>you</u> and/or any members of your <u>household</u> seen, read and/or participated in any <u>outreach</u> or <u>awareness activities</u> related to the Conservation Area(s)? (MC8) <b>Ng mla ta el om mesang ke</b> oiuii, ke ngar er a miting me a lechub a cheldecheduch el olisechakl a teletelel a blul el basic er a beluam?							
□ No, <u>none</u> of t <b>Dirkak</b>	hem	Yes, some of them Mla ngar er a bebil		Yes, many of them <b>Kmal betok</b>			
a ika el beldukl er		(select all that apply): A le ngar er ng	gii,				
Fact sheets Babier er a sodel a charm, dellomel, basio, me abebil el tekoi er a science el kirel a blul el basio		Student field education programs Omesarch me a omesuub er a skuul		Other			
Babier el mesaod, omeklatk e omeketakl a teletelel me a llechul a ol		Education and/or Awareness Plans Plan me a lechub e ng babier el smaod a telbiil, ureor, okedmeklel, omengkerengel, me a osisecheklel a blul el basio.		Other			
23. Indicate your <u>level of support</u> for each of the following: (MC9) <b>Kau mleliang a olangch er a</b>							

kmo koumerang e oldubech a ika el beldukl er eou:

	Extensive level of	High level of	Medium level	Limited	Do not
	support <b>Dmolech el klaumerang e oldubech</b>	support Kmal oumerang e oldubech	of support <b>Kuumerang e oldubech</b>	support  Diak sa el  oumerang e  oldubech	support Diak kuumerang me a ka kuldubech
Micronesia Challenge					
Protected Areas Network					
Bul					
State ConservationArea (s)					

- 24. Do you think the Marine Protected Area (s) have changed the following for your household? (PI4) A blul el basio er a kerker, ngar ngii a blal ngedechii er a delengcheklem?
  - o If No, mark 'not changed' box. A lak e mleliang a olangch er a "dirkak a mengodech"
  - o If Yes, has it increased or decreased the items listed? Greatly/Somewhat? A le ngar er ngii e mleliang a olangch er a klungel a mla mengodech er a ika el beldukl er eou.

	Greatly Increased <b>Kmal klou</b>	Somewhat Increased <b>Telkib el</b> <b>klou</b>	Not Changed <b>Dirkak a</b> <b>mengodech</b>	Somewhat Decreased <b>Telkib mla</b> <b>ongesngesii</b>	Greatly Dereased Kmal klou a bla losengesii	Don't Know <b>Ngaukai</b>
Overall quality of the marine environment						
Klungiolel a kerker						
Abundance of fish						
<u>Ildisel a ngikel</u>						
Abundance of invertebrates						
Ildisel a cheled						
Size of fish						
Meklungel a ngikel						
Size of invertebrates						
Meklungel a cheled						
Availability of food from fish						
<u>Ildisel a odoim el ngikel</u>						
Availability of food from invertebrates						
<u>Ildisel a kall el cheled</u>						
Spiritual and cultural amenity						
Nglsecheklel a klebelau me a tekoi el chelid						

- 25. If applicable, do you think that the <u>Terrestrial Conservation Area (s)</u> have changed the following for your <u>household</u>? (MC1, PI1, PI2, PI7) A omomdasu e a blul el basio er a beluu ng ngar ngii a bla el ngedechii er a delengcheklem?
  - o If No, mark 'not changed' box. A lak e mlelia olangch er a "Dirkak a mengodech"
  - o If Yes, has it increased or decreased the items listed for your household? Greatly/Somewhat? A le ngar er ngii e mlecha olangch er a klungel a mla mengodech er a ika el beldukl er eou:

	Greatly Increased Kmal klou	Somewhat Increased Telkib el klou	Not Changed <b>Dirkak a</b> <b>mengodech</b>	Somewhat Decreased Telkib mla ongesngesii	Greatly Dereased <b>Kmal klou a</b> bla losengesii	Don't Know <b>Ngaukai</b>	Not applicable
Overall quality of the terrestrial							
environment Klungiolel a beluu							
Abundance of fruit bats							
<u>Ildisel a olik</u>							
Abundance of medicinal plants							
<u>Ildisel a dellomel el kar</u>							
Abundance of building materials							
<u>Ildisel a klalo el kerrekar</u>							
Size of fruit bats							
Meklungel a olik							
Size of building materials							
Meklungel a klalo el kerrekar							
Availability of <u>farm food (crops)</u> <b>Ildisel a delomel el kall</b>							

(ongraol me a yasai)				
Quality of public freshwater				
Klungiolel a ralm er a beluu				
Quantity of public freshwater				
<u>Ildisel a ralm er a beluu</u>				
Spiritual and cultural amenity				
Nglsecheklel a klebelau me a				
tekoi el chelid				

26. Indicate if you <u>agree</u> (and the level to which you do) with the below <u>statements</u>: (PI3, PI11,MC4) Mleliang a olangch el kmo ke kongei a lechub e ng diak er a ika el beldukl er eou:

Statements Tekoi	Very strongly agree Ak mal mui el kongei	Strongly agree Choi ak kongei	Moderately agree Ou ralm sils	Agree a little Oumededengei	Do not agree Diak moldubech	Don't know Diak Kudengei
Overall, the Conservation Area(s) has						
been beneficial to our community						
A ika el blul el basio <u>a ngar er ngii</u> al relii er a beluad						
I often see or hear about illegal entry						
or taking of resources from the		Ш				
Conservation Area(s)						
Ak blechoel mesterir e remenges a						
chisir a re mo soiseb me a re						
melemall a llechul a blul el basio						
There is <u>adequate enforcement</u> of the						
<u>rules</u> of the Conservation Area(s)						
Ng ungil a otutel a llechul a blul el						
basio						
There is <u>adequate monitoring</u> of the						
natural resources in our community						
Ng ungil a klekerngel (monitoring)						
a dikesel a beluu (natural resources)						
There have been positive livelihood						
benefits due to the Conservation Area(s)						
A ika el blul el basio a uchul a ungil						
omenged, omelngot, omengerker me						
a ungil el klengar.						
There have been positive economic						
benefits due to the Conservation	_	_	_	_	_	_
Area(s)						
A ika el blul el basio a dirrek el						
uchul a ungil kerruul el me er a						
beluu						
There have been positive cultural and						
spiritual benefits due to the						
Conservation Area(s)						

A blul el basio a uchul a ngesecheklel a klebelau me a tekoi chelid	el					
There have been <u>positive</u> <u>environmental benefits</u> due to the Conservation Area (s)						
A ika el blul el basio a msa klungiolel a beluu me a kerker						
Everyone benefits equally from the						
Conservation Area(s)						
A klungiaol el mengai er a ika el blul el basio a tabesul e oberk el m	10					
er a dertang el chad er a beluu						
If we want to preserve our natural						
resources then 'closing off' certain areas is necessary						
Al sekum e ng soad el mengeluolu	n					
a dikesed e ng kired el osimer/omu						
a bebil er a basio	=					
1. Can you tell us the conservation area state it) (Goal 3)						ly
			Yes	No		
Teluleu Cons	servation Area (M	PA)				
2. Do you know the o kerrengsel tia el b					ngelii a	
3. Indicate if the office bleketakl el ou ku					e following. <b>Ng</b>	
		Yes		No		
-	rly marked. <b>Ng er ngii a kui</b> gch)					
l l	ly visible. <b>Ng</b> takl a kui.					

**4.** Indicate your <u>level of support</u> for the <u>following changes</u> to the Local Conservation Area. **Ke oldubech a ika el uldasu el mo melodech er a llechul tia el blul el basio**: (Goals 1-2, 1-4)

	Extensive level of support  Dmolech el klaumerang e oldubech	High level of support Kmal oumerang e oldubech	Medium level of support  Kuumerang e oldubech	Limited support  Diak sa el  oumerang e  oldubech	Do not support  Diak  kuumerang  me a ka  kuldubech
Potential aquaculture development in Teluleu. Ng sebechel el mo er ngii a sers er a ngikel, cheld me a bebil er a charm er a daob er a chelsel a Teluleu.					
Expansion of the protected area beyond Teluleu from 'ridge to reef'.  Ke de mo kilungii a blul el basio er a beluu el mo er a kereker me a Teluleu.					

If there are any other comments, please write them here: